

1 MORRISON & FOERSTER LLP
 2 MICHAEL A. JACOBS (Bar No. 111664)
 3 mjacobs@mofo.com
 4 MARC DAVID PETERS (Bar No. 211725)
 5 mdpeters@mofo.com
 6 DANIEL P. MUINO (Bar No. 209624)
 7 dmuino@mofo.com
 8 755 Page Mill Road, Palo Alto, CA 94304-1018
 9 Telephone: (650) 813-5600 / Facsimile: (650) 494-0792

10 BOIES, SCHILLER & FLEXNER LLP
 11 DAVID BOIES (Admitted *Pro Hac Vice*)
 12 dboies@bsflp.com
 13 333 Main Street, Armonk, NY 10504
 14 Telephone: (914) 749-8200 / Facsimile: (914) 749-8300
 15 STEVEN C. HOLTZMAN (Bar No. 144177)
 16 sholtzman@bsflp.com
 17 1999 Harrison St., Suite 900, Oakland, CA 94612
 18 Telephone: (510) 874-1000 / Facsimile: (510) 874-1460
 19 ALANNA RUTHERFORD (Admitted *Pro Hac Vice*)
 20 575 Lexington Avenue, 7th Floor, New York, NY 10022
 21 Telephone: (212) 446-2300 / Facsimile: (212) 446-2350 (fax)

22 ORACLE CORPORATION
 23 DORIAN DALEY (Bar No. 129049)
 24 dorian.daley@oracle.com
 25 DEBORAH K. MILLER (Bar No. 95527)
 26 deborah.miller@oracle.com
 27 MATTHEW M. SARBORARIA (Bar No. 211600)
 28 matthew.sarboraria@oracle.com
 500 Oracle Parkway, Redwood City, CA 94065
 Telephone: (650) 506-5200 / Facsimile: (650) 506-7114

29 *Attorneys for Plaintiff*
 30 ORACLE AMERICA, INC.

31 **UNITED STATES DISTRICT COURT**
 32 **NORTHERN DISTRICT OF CALIFORNIA**
 33 **SAN FRANCISCO DIVISION**

34 ORACLE AMERICA, INC.

35 Case No. CV 10-03561 WHA

36 Plaintiff,

37 v.

38 GOOGLE, INC.

39 Defendant.

40 **DECLARATION OF IAIN M. COCKBURN**
 41 **IN SUPPORT OF ORACLE AMERICA,**
 42 **INC.'S MOTION TO STRIKE PORTIONS**
 43 **OF GREGORY LEONARD'S**
 44 **SUPPLEMENTAL REPORT**

45 Dept.: Courtroom 8, 19th Floor
 46 Judge: Honorable William H. Alsup

1 I, IAIN M. COCKBURN, declare as follows:

2 1. I have been retained by Oracle America, Inc. ("Oracle") as an expert in this matter. My
 3 background and qualifications, the terms of my retention, and the documents I have reviewed are set
 4 forth in the report I submitted in this matter on February 3, 2012, as revised February 9, 2012, and I
 5 incorporate them herein by reference.

6 2. I have reviewed the supplemental expert report of Dr. Gregory Leonard dated February 17,
 7 2012, and counsel for Oracle asked me to consider in particular the forward citations analysis
 8 included on page 7 of Dr. Leonard's supplemental report and supported by the backup materials that
 9 were subsequently produced by Google.

10 3. As I described at my deposition, I am very familiar with patent citations analysis.¹ A
 11 citations analysis involves, in its simplest form, counting citations to any given patent that appear in
 12 later-issued patents. I have worked extensively with this aspect of patent data since I wrote my Ph.D.
 13 thesis, and I have since conducted substantial research on citations analysis. I have also served as
 14 principal investigator and project leader of a major National Science Foundation funded project to
 15 develop and extend the National Bureau of Economic Research's pioneering work in this field. I am
 16 very familiar with methodological issues in the use of patent citations from my academic work. As I
 17 explained in my deposition, in my opinion, patent citation analysis is not a reliable basis for
 18 comparing and ranking patents in the context of this case. In addition, Dr. Leonard's analysis of
 19 citations is methodologically flawed.

20
 21
 22 1 I also note that I have published numerous peer-reviewed articles concerning patent citation
 23 analysis. See Cockburn, I., MacGarvie, M. "Patents, Thickets and the Financing of Early-Stage
 24 Firms: Evidence from the Software Industry." *Journal of Economics and Management Strategy*,
 25 2009, 18(3):729-773; Cockburn, I., and MacGarvie, M. "Entry and Patenting in the Software
 26 Industry." *Management Science*, 57(5):915-933; Kleis, L., P. Chwelos, R. Ramirez and I. Cockburn
 27 "Information Technology and Intangible Output: The Impact of IT Investment on Innovation
 28 Productivity." *Information Systems Research*, forthcoming; Agrawal, A., I. Cockburn, and J.
 29 McHale "Gone But Not Forgotten: Labor Flows, Knowledge Spillovers, and Enduring Social
 30 Capital." *Journal of Economic Geography*, 2006, 6(5), pp. 571-591; Agrawal, A., Cockburn, I. and C.
 31 Rosell "Not Invented Here: Innovation in Company Towns." *Journal of Urban Economics*, 2009,
 32 67(1):78-89; Wagner, S. and I. Cockburn, I. "Patents and the Survival of Internet-related IPOs."
 33 *Research Policy*, 2010, 39(2):214-228.

1 4. There are two fundamental problems with Dr. Leonard's citations analysis, each of which
 2 render Dr. Leonard's analysis unreliable and result in Dr. Leonard understating the relative
 3 significance of the patents-in-suit. First, Dr. Leonard fails to account for the fact that certain patents
 4 were re-issued. Second, Dr. Leonard fails to account for the fact that the patents were issued on
 5 different dates.

6 5. Dr. Leonard's first error is particularly relevant in this case given that the '104 patent is a
 7 re-issue of two prior patents, and there are a substantial number of citations to the prior patents. The
 8 predecessor to the '104 is USRE36204E1 (applied for November 1996 and issued in April 1999),
 9 which has 1 citation. The predecessor to USRE36204E1 is US5367685 (applied for December 1992
 10 and issued in November 1994), which has 73 citations.

11 6. Correcting for this error increases the number of relevant citations for the '104 patent from
 12 the three (3) listed in Dr. Leonard's backup materials to 77, and changes the rank of the '104 patent
 13 from 11th under Dr. Leonard's analysis to 1st. With this correction, the '104 patent has more than
 14 double the number of citations as compared to the next most highly-cited patent evaluated by Dr.
 15 Leonard. As demonstrated by this one correction, Dr. Leonard's analysis is not only unreliable but
 16 also significantly understates the relative significance of the patents-in-suit.

17 7. Dr. Leonard's second error is also significant because the 22 patents evaluated by Dr.
 18 Leonard were issued over various dates spanning more than ten years. His first ranking does not
 19 account for this fact in any way, which is a major problem. It is obvious that the later in time a patent
 20 is issued, the fewer citations it will accumulate before the present. This issue has been studied in
 21 depth by researchers who work with citation counts and it is unambiguous that in any effort to
 22 compare citation counts across patents, one has to carefully control for the time that each patent has
 23 had to accumulate citations.² Without any control for patent issue date, an analysis of citation counts
 24 is meaningless.

25
 26 2 See, for example, Bronwyn Hall, Adam Jaffe, and Manuel Trajtenberg "Innovation and Market
 27 Value," NBER Working paper 6984, 1999. "The determination of the appropriate benchmark is
 28 complicated by several phenomena that are inherent to the patent citations data. First, ...the number
 of citations received by any given patent is truncated in time because we only know about the
 citations received so far. More importantly, patents of different ages are subject to differing degrees

[Footnote continued on next page]

1 8. In his second ranking, Dr. Leonard attempts to evaluate the number of citations that each
2 patent he considers receives relative to its peers. For each of the 22 patents, he “benchmarks” against
3 a set of other patents within the same class-subclass, issued within a six-year window around the
4 issuance date for the patent in question. This method of benchmarking is seriously flawed and fails
5 to address the “citation truncation” issue. The issue dates for the comparison patents considered by
6 Dr. Leonard are spread out across the six year period he constructs, so some patents will enjoy a six-
7 year head start in terms of accumulating citations compared to others within that same comparison
8 group. Many patents in the comparison group will have up to three-year head start on the specific
9 patent that Dr. Leonard is examining. Dr. Leonard makes no attempt to correct for this discrepancy
10 in time periods over which patents accumulate citations within his comparison groups.

11 9. Due to this setup, all of Dr. Leonard’s comparison groups exhibit a strong negative
12 correlation between the number of citation counts and the issuance date – the later the patent is
13 issued, the fewer citations it will accumulate. This issue is especially pronounced for the most recent
14 patents. The ‘720 patent was granted in September 2008, so Dr. Leonard constructs a comparator
15 group of patents that were issued between September 2005 and September 2011. What this means is
16 that a substantial number of patents in this group had over 6 years to accumulate citations – about
17 twice as much time as the ‘720 patent.

18 10. I have specifically reviewed the comparison groups Dr. Leonard created for the ‘205
19 and ‘720 patents. Within these groups, the correlations between the number of citations a patent
20 receives and its issue date are -0.34 (‘205 patent comparators) and -0.47 (‘720 patent comparators).
21 These correlations are negative and clearly distinct from zero, affirming that the later a patent was
22 issued, the fewer citations it has accumulated so far. Another way to look at the problem is
23 comparing the average number of citations received by patents issued prior to the ‘205/‘720 patents
24 within their respective groups and patents issued after those patents. Within the ‘205 comparison
25 group, patents issued before the ‘205 have received on average 13.4 citations, while patents issued

26 [Footnote continued from previous page]
27 of truncation. For example, it is not obvious whether a 1990 patent that received 5 citations by 1999
28 should be thought of as more or less highly cited than a 1985 patent that received 10 citations by
1999.”

1 after the '205 received on average 4.9 citations. The discrepancy is even higher for the '720
2 comparison group: 4.5 citations for patents issued before the '720 patent and 0.8 citations for patents
3 issued after the '720 patent. Not surprisingly, the '104, '205, and '720 patents do not rank highly in
4 terms of citations received relative to the comparison sets constructed by Dr. Leonard.

5 11. Because of this approach, Dr. Leonard's results are unreliable and understate the
6 relative significance of the patents-in-suit. Sun's patents in question are relatively recent patents: the
7 '720 was granted in September 2008 and the '205 was granted in June 2005. The less time has passed
8 since the issue date, the more bias is going to be generated by Dr. Leonard's inclusion of patents filed
9 in the prior three years in that comparator group. Not surprisingly, for both of Dr. Leonard's
10 analyses, of the nine patents-not-in-suit that Dr. Leonard ranks above the '205, only 2 were issued
11 later than the '205. However, of the 10 such patents that Dr. Leonard ranks below the '205, seven
12 were issued later than the '205. All three patents that were issued in 2008 or later (besides the '720)
13 have *zero* citations and are at the bottom of Dr. Leonard's ranking.

14 12. Dr. Leonard's failure to control for the patent issuance date renders his analysis
15 meaningless.

16
17 I declare under penalty of perjury that the foregoing is true and correct and that this
18 declaration was executed on February 24th, 2012 at Boston, Massachusetts.

19
20 DATED: February 24, 2012

/s/Iain M. Cockburn

21 IAIN M. COCKBURN

1 ATTESTATION OF FILER

2 I, Steven C. Holtzman, have obtained Dr. Iain Cockburn's concurrence to file this document
3 on his behalf.

4 Dated: February 24, 2012

5 BOIES, SCHILLER & FLEXNER LLP

6 By: /s/ Steven C. Holtzman
Steven C. Holtzman

7 *Attorneys for Plaintiff*
8 ORACLE AMERICA, INC.

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BOIES, SCHILLER & FLEXNER LLP
OAKLAND, CALIFORNIA